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| 09/525,694 | 03/14/2000 | Ramarathnam Venkatesan | MS-81(116629.1) | 8567 |

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| EXAMINER |
|---|
| KIM, JUNG W |

| ART UNIT | PAPER NUMBER |
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| 2132 | 8 |

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- Th MAILING DATE of this communication appears on the cover sheet with the corr spondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL.**    2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _1-50_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-5,9,12-14,19-29,33,36-38 and 43-50_ is/are rejected.

7)☐ Claim(s) _6-8,10,11,15-18,30-32,34,35 and 39-42_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _14 March 2000_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
   application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _5_.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

## DETAILED ACTION

1.      Claims 1-50 have been examined.

### *Claim Rejections - 35 USC § 112*

2.      The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.      Claims 1, 4, 9, 12-14, 25, 28, 33, and 36-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4.      Claim 1 recites the limitations "the different ones" in line 30 and "the associated execution flow" in line 32.  There is insufficient antecedent basis for these limitations in the claim.

5.      Claim 4 recites the limitation "the selected ones of the procedures" in lines 4 and 8.  There is insufficient antecedent basis for this limitation in the claim.

6.      Claim 9 recites the limitation "the inserted procedures" in lines 2 and 4.  There is insufficient antecedent basis for this limitation in the claim.

7.      Claim 12 recites the limitation "the selected executable procedure" in line 14.
There is insufficient antecedent basis for this limitation in the claim.


8.      Claim 13 recites the limitation "the selected one procedure" in line 3.  There is
insufficient antecedent basis for this limitation in the claim.


9.      Claim 14 recites the limitation "the one procedure" in line 3.  There is insufficient
antecedent basis for this limitation in the claim.


10.     Claim 25 recites the limitations "the different ones" in line 30 and "the associated
execution flow" in line 32.  There is insufficient antecedent basis for these limitations in
the claim.


11.     Claim 28 recites the limitation "the selected ones of the procedures" in lines 4
and 8.  There is insufficient antecedent basis for this limitation in the claim.


12.     Claim 33 recites the limitation "the inserted procedures" in lines 2 and 4.  There is
insufficient antecedent basis for this limitation in the claim.


13.     Claim 36 recites the limitation "the selected executable procedure" in line 14.
There is insufficient antecedent basis for this limitation in the claim.

14.    Claim 37 recites the limitation "the selected one procedure" in line 3. There is

insufficient antecedent basis for this limitation in the claim.


15.    Claim 38 recites the limitation "the one procedure" in line 3. There is insufficient

antecedent basis for this limitation in the claim.


## Claim Rejections - 35 USC § 102

16.    The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17.    Claims 1-5, 19-20, 24-29, 43-44, 48-50 are rejected under 35 U.S.C. 102(b) as

being anticipated by Johnson et al. U.S. Patent No. 5,748,741 (hereinafter Johnson).

As per claim 1, Johnson discloses an apparatus for forming an identifier for an input

object and for securely marking the input object with the identifier so as to yield a

marked object (see Johnson, col. 5, line 61-col. 6, line 24), the apparatus comprising:

    a.    a processor;

    b.    a memory having computer executable instructions stored therein;

    c.    wherein the processor, in response to the stored executable instructions:

        i.    generates a flow representation for the input object, the

        representation having a plurality of nodes, the nodes representing

        predefined first operations performed by the input object, and connections

among the nodes signifying associated flow among the predefined first

operations performed by the input object (see Johnson, col. 11, lines 45-

47; col. 7, lines 45-65);

ii.     randomly selects first and second nodes from the plurality of nodes

in the representation so as to form a pre-defined number of nodal pairs,

each of the pairs having one of the first nodes and a corresponding one of

the second nodes (see Johnson, col. 11, lines 34-42; Figure 7; col. 10,

lines 14-28);

iii.     for each of the nodal pairs, establishes flow between the first and

second nodes in the each nodal pair and inserts, in the flow so

established, a selected one of a plurality of different pre-defined second

operations so as to collectively define the marked object, whereby the

marked object implements the predefined first operations and a plurality of

selected ones of the predefined second operations, each of which has

been randomly spliced into flow of the input object, wherein the identifier

collectively comprises all the different ones of the plurality of predefined

second operations, and the associated execution flow associated

therewith and involving the nodal pairs (see Johnson, Figure 7, x and y;

col. 11, line 34-col. 12, line 30).

The aforementioned covers claim 1.

18.     As per claim 2, Johnson discloses an apparatus as outlined above in the claim 1

rejection under 35 U.S.C. 102(b).  In addition, the input object comprises a software

object (see Johnson, abstract; col. 11, line 46).


19.     As per claim 3, Johnson discloses an apparatus as outlined above in the claim 2

rejection under 35 U.S.C. 102(b).  In addition, the software object comprises, input

executable code, at least one instruction in the input executable code is associated with

a corresponding one of the predefined first operations, and executable code for a

corresponding executable procedure is associated with each selected one of the

predefined second operations (see Johnson, Figure 7; col. 11, line 46-col. 12, line 30).


20.     As per claim 4, Johnson discloses an apparatus as outlined above in the claim 3

rejection under 35 U.S.C. 102(b).  In addition, the processor, in response to the stored

instructions:

        a.     inserts a pre-defined number of separate links and designations for the

        selected ones of the procedures into the flow representation so as to yield a

        combined flow representation (see Johnson, col. 9, line 43-col. 10, line 28; col.

        11, lines 56-58);

        b.     converts, in response to the input executable code and executable code

        for the selected ones of the procedures, the combined flow representation into

        output executable code, the output executable code being the marked code (see

        Johnson, col. 5, lines 40-48).

The aforementioned covers claim 4.

21.    As per claim 5, Johnson discloses an apparatus as outlined above in the claim 4 rejection under 35 U.S.C. 102(b). In addition, the input executable code comprises first and second portions thereof and the flow representation comprises first and second separate flow representations for the first and second portions of the input executable code, respectively (see Johnson, Figure 7, portions a and b, intertwining Functions A and B).

22.    As per claim 19, Johnson discloses an apparatus as outlined above in the claim 4 rejection under 35 U.S.C. 102(b). In addition, the processor, in response to the stored instructions:

a.    partitions the flow representation into k-clusters each so as to yield a cluster flow representation (see Johnson, col. 7, line 54-col. 8, line 3; col. 11, lines 46-47; Figure 5);

b.    randomly selects the first and second nodes in the cluster flow representation so as to form a corresponding one of the nodal pairs (see Johnson, col. 11, lines 34-42; Figure 5);

c.    inserts the designation for the selected executable procedure at a first node in the nodal pair (see Johnson, Figure 6);

d.    repeats operations b and c a pre-defined number of times so as to insert a pre-defined number of separate procedures into the flow representation so as to

yield the combined flow representation (see Johnson, col. 11, lines 57-59; col.

11, line 65-col. 12, line 30).

The aforementioned covers claim 19.


23.    As per claim 20, Johnson discloses an apparatus as outlined above in the claim

19 rejection under 35 U.S.C. 102(b). In addition, the processor, in response to the

stored instructions, inserts executable code for the selected one procedure in

noncontiguous locations in the input executable code (see Johnson, col. 11, lines 34-42

and lines 62-64).


24.    As per claim 24, Johnson discloses an apparatus as outlined above in the claim

19 rejection under 35 U.S.C. 102(b). In addition, the processor, in response to the

stored instructions, randomly selects the first and second nodes from different clusters

within the cluster flow representation (see Johnson, col. 11, lines 34-42 and lines 62-

64).


25.    As per claims 25-29, 43-44, and 48-50, they are method claims corresponding to

claims 1-5, 19-20, and 24, and they do not teach or define above the information

claimed in claims 1-5, 19-20, and 24. Therefore, claims 25-29, 43-44 and 48-50 are

rejected as being anticipated by Johnson for the same reasons set forth in the rejections

of claims 1-5, 19-20, and 24.

## *Claim Rejections - 35 USC § 103*

26.    The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

27.    Claims 21-23 and 45-47 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Johnson.  As per claim 21, Johnson discloses an apparatus as

outlined above in the claim 19 rejection under 35 U.S.C. 102(b).  Johnson does not

expressly disclose that the selected executable procedure is a stored routine in a pre-

defined library.  However, stored routines in a pre-defined library are standard means to

bundle general procedures that are useful for the operation of an application or a

plurality of applications.  For example, most applications on a computer, including the

OS itself, utilize stored procedures in libraries that have been coalesced into these

bundles to be easily shared among these applications.  The examiner takes Official

Notice of this teaching.  It would be obvious to one of ordinary skill in the art at the time

the invention was made for the selected executable procedure to be a stored routine in

a pre-defined library.  Motivation for such an implementation would provide a local

resource where standard procedures are defined.

28.     As per claim 22, Johnson covers an apparatus as outlined above in the claim 21

rejection under 35 U.S.C. 103(a).  In addition, each of the inserted procedures

implements, when executed, a pre-defined function such that if any of the inserted

procedures is removed from the marked code, the marked code, when subsequently

executed, will terminate its execution (see Johnson, col. 5, lines 49-54; col. 12, lines 12-

14).


29.     As per claim 23, Johnson covers an apparatus as outlined above in the claim 21

rejection under 35 U.S.C. 103(a).  In addition, at least one of the inserted procedures

implements, when executed, a pre-defined function, which is independent of

functionality provided by the non-marked application program (see Johnson, col. 12,

lines 12-14).


30.     As per claims 45-47, they are method claims corresponding to claims 21-23, and

they do not teach or define above the information claimed in claims 21-23.  Therefore,

claims 45-47 are rejected as being unpatentable over Johnson for the same reasons set

forth in the rejections of claims 21-23.


### *Allowable Subject Matter*

31.     Claims 6-18 and 30-42 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

## *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Collberg et al. PCT International Publication Number WO 99/64973.

Wallace U.S. Patent No. 6,192,475.

Chow et al. U.S. Patent No. 6,594,761.

Collberg et al. U.S. Patent No. 6,668,325.

Qu et al. 'Analysis of Watermarking Techniques for Graph Coloring Problem'.

Collberg et al. 'Software Watermarking: Models and Dynamic Embeddings'.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung W Kim whose telephone number is (703) 305-8289. The examiner can normally be reached on M-F 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (703) 305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system.  Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Jung W Kim
Examiner
Art Unit 2132

Jk
March 16, 2004

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